

Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please DO NOT fill in and submit this form until the project has been completed.

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Pépin Jonathan
Project Title	Initiative on sustainable management of the seagrass community on the Great Reef of Toliara
Application ID	42927-1
Date of this Report	07/31/2025

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Restoration of the seagrass beds of the Great Reef of Toliara.			x	The proper selection of restoration sites and the timing of the restoration activities, as well as the active participation of community volunteers. 80 local volunteers were trained in restoration techniques and participated in the transplantations.
Awareness and environmental education of local communities in the villages of Sarodrano, Ankilibe, Akiembe-Bas, Akiembe-Haut, Mahavatse-II, and Ambohitsabo.		x		<p>Two awareness campaigns were conducted. Approximately 400 members of the local community, including 80 local volunteers attended. The campaigns aimed to educate local communities about the still little-known ecosystem of seagrass beds, as well as to promote best practices, sustainable fishing, and ecological actions to preserve and protect marine and fishery resources.</p> <p>The number of awareness campaigns and the materials used are insufficient for all the target villages. The cyclones affected the timeline for carrying out the awareness activities, as it was necessary to respect the local communities who had suffered damage and to allow them time to recover and gradually resume their normal lives.</p>
Determine the characteristics and			x	Individual surveys (with 26 people in total: eight fishers in Ankiembe-

<p>the pressures on the seagrass beds of the Great Reef of Toliara.</p>				<p>Haut, and six fishers in each of the villages of Ankiembe-Bas, Mahavatse II, and Ambohitsabo) and two focus group discussions (one in Ankilibe with six participants and another in Sarodrano with eight participants) provided valuable insights into the characteristics of the pressures, thanks to the active participation of local communities and fishermen. In addition, it is necessary to quantify these pressures related to fishing gear and techniques impacting the seagrass meadows.</p>
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2. Describe the three most important outcomes of your project.

a). Restoration of 5 Hectares of Seagrass Beds: Although the project initially planned for the restoration of two (02) hectares of seagrass beds, we were able to exceed this goal by restoring a total of five (05) hectares, currently distributed across four restoration sites identified in collaboration with local communities and fishers, such as Andretiky, Disete, and Andaboy-Antimo. Three (03) restoration campaigns were carried out at each site, enabling the completion of 15 activities outlined in the overall restoration plan. To date, 15 plots have been established, totaling 1,500 transplanted sods distributed along 60 lines. These results reflect the effective mobilization of local teams and a strong commitment from local communities to the restoration of marine ecosystems.

b). Determination of the spatial distribution of seagrass beds: The total area of seagrass beds in the Grand Reef of Toliara is 523.48 hectares, which represents 14.86% of the Toliara Bay area, corresponding to 3,522.65 hectares. Eight species are present: *Cymodocea rotundata*, *Cymodocea serrulata*, *Halodule uninervis*, *Thalassodendron ciliatum*, *Syringodium isoetifolium*, *Halophila ovalis*, *Halophila stipulacea*, and *Thalassia hemprichii*. Among the four seagrass sites, the Andretiky site shows the highest abundance value, equal to 3,659 individuals, while the Andaboy-Antimo site shows the lowest abundance value, with 1,051 individuals (p -value = 0.045). The Andretiky site also has the highest coverage rate (48.69%), whereas the Andaboy-Antimo site has the lowest (19.21%). The high abundance of the species *Syringodium isoetifolium* and *Halodule uninervis* at the Andretiky and Disete sites significantly influences abundance and coverage rate compared to the other sites (p -value = 0.0161).

c). Identification of Small-Scale Fishing Pressure: Two main fishing techniques have been identified: mosquito-net trawl fishing, carried out by canoe, and gleaning, mainly practiced by women. Fishing sites vary by village: Andretiky (Ankiembe), Norikazo (Ankilibe), and Ampasifoty (Sarodrano). Gleaning targets mollusks and sea

cucumbers, especially in Sarodrano during spring tides. Trawl fishing is practiced during neap tides at night in Sarodrano and Ankiembe-Haut, and during the day in Ankilibe and Ankiembe-Bas. Foot fishing involves 12 pairs per day with a CPUE (Catch Per Unit Effort) of 0.9 kg per fisher. The average fishing effort is 47 dugout canoes/day in Ankiembe, 14 dugout canoes/day in Ankilibe, and 1 dugout canoe/day in Sarodrano, with respective CPUEs of 2.58 kg, 1.5 kg, and 1.2 kg. Catches from seagrass beds include shrimp, small crustaceans, crabs (locally known as "Mahavingo"), and fish. The most frequently caught fish families are: Blennidae (41%), Siganidae (32%), and Carangidae (27%). Mollusks and sea cucumbers are exclusively collected in Sarodrano through foot fishing.

The data on fishing catch was obtained through interviews with local fishers. In addition, catch weighing was also conducted over a five-month period (from December to April) using a portable electronic scale at the landing sites, for approximately five days per week.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The particularly adverse weather conditions that occurred between January and March 2025, marked by the successive passage of three tropical cyclones, significantly disrupted the schedule and implementation of planned missions within the community-based restoration campaigns, as well as the bioecological monitoring activities at the restoration sites and in surrounding seagrass meadows. These extreme climatic events led to the cancellation or postponement of several field operations due to the temporary inaccessibility of certain areas, unstable marine conditions, and increased logistical and safety risks for field teams. In response to this situation, a dedicated assessment of the cyclones' impact on both restored sites and natural seagrass meadows was incorporated into subsequent bioecological monitoring campaigns. This approach made it possible to document ecosystem disturbances (such as uprooting of planted vegetation, substrate displacement, and partial degradation of installed structures) and to revise intervention priorities accordingly, in order to strengthen the resilience of restored habitats.

During the January–March 2025 period, the Andaboy-Antimo and Disete restoration sites was particularly affected by sedimentation caused by the combined effects of dynamic coastal currents and the passage of three consecutive tropical cyclones. These extreme events triggered a major hydro-sedimentary imbalance, resulting in massive sediment transport toward the coast and the accumulation of sand over a significant portion of the restored area, with local deposits reaching over 30 centimeters in depth. This sedimentation process led to the partial smothering of pioneer vegetation, alterations in newly established microhabitats, and a temporary reduction in habitat suitability for certain faunal species, particularly benthic organisms. In addition, the excessive sediment disrupted ecological monitoring activities by hindering access to measurement devices and obscuring key monitoring markers. This phenomenon highlights the vulnerability of restored coastal ecosystems to extreme weather events and underscores the urgent need to

integrate resilience measures into restoration approaches, such as the installation of natural protective structures and continuous geomorphological monitoring.

4. Describe the involvement of local communities and how they have benefited from the project.

The authorization and selection of restoration sites, as well as donor sites for the collection of seagrass sods, were carried out collaboratively with local communities and fishers. Field visits were planned and conducted jointly with local stakeholders, allowing for the participatory validation of each site selected for restoration. This included identifying areas with still-functioning seagrass beds, zones showing significant degradation, and historically occupied seagrass habitats. This process helped optimize the ecological relevance of site selection. Furthermore, participatory mapping activities were conducted with the active support of local communities—particularly fishers—as part of awareness-raising campaigns. These exchanges enriched local knowledge, fostered the integration of scientific and traditional knowledge systems, and strengthened community ownership of the restoration efforts.

The technical knowledge of local communities, especially fishers, regarding seagrass transplantation has significantly improved over the course of the restoration campaigns. This skill is now well mastered by community volunteers who actively participated in field operations. Their dedication and growing expertise have played a key role in the progressive expansion of the restored area. While *Cymodocea serrulata* remains the primary species targeted for transplantation due to its ecological dominance, other species, such as *Syringodium isoetifolium* and *Halodule uninervis*, have also been observed at restoration sites. Their presence is the result of both unintentional transplantations during sod collection and spontaneous natural regeneration, indicating favorable ecological dynamics and gradual recolonization of degraded habitats.

Local communities, particularly fishers from the Grand Reef of Toliara, have demonstrated strong willingness to collaborate in participatory surveys and catch monitoring of resources extracted from the seagrass ecosystem. This commitment is a major asset to the project, as it enhances both data collection quality and community engagement with marine conservation issues. Through this collaboration, it becomes possible to develop management strategies that are better aligned with on-the-ground realities, while also raising awareness and reinforcing the sense of responsibility among local actors toward the protection of their natural environment.

5. Are there any plans to continue this work?

Yes, concrete plans are structured around three main pillars to ensure the continuity and long-term sustainability of the project.

As part of the project extension, several actions are planned to consolidate achievements and expand restoration efforts. The primary objective is to reach 10 hectares of restored seagrass meadows through the continuation of ecological restoration campaigns. In parallel, the project will intensify awareness-raising activities, including the organization of village-level community meetings aimed at mobilizing local populations around the protection of seagrass ecosystems. Special

attention will also be given to environmental education, with the implementation of tailored educational programs in public primary schools, in order to raise awareness among younger generations about the importance of this marine ecosystem.

To ensure local ownership and the long-term effectiveness of the actions undertaken, project activities will be integrated into local governance structures. This will involve the protection of restoration zones to safeguard them from unsustainable practices. Additionally, the project plans to establish management committees in each target village. These committees will be responsible for overseeing the application of good conservation practices. Furthermore, community-based agreements specific to the seagrass ecosystem will be developed and implemented in the villages of Sarodrano, Ankilibe, Akiembe-Bas, Akiembe-Haut, Mahavatse-II, and Ambohitsabo, with the aim of guiding preservation efforts and formalizing community commitments.

Finally, ensuring the sustainability of results is a key component of the project. This will be achieved through the implementation of regular ecological monitoring, supported by the provision of suitable monitoring equipment and the strengthening of technical capacities among local stakeholders. Targeted training sessions will be conducted to ensure the continuity of efforts, particularly in areas such as seagrass monitoring, public awareness, and community-based management. Environmental education will remain a central pillar, sustaining positive momentum within communities and embedding conservation practices into local behaviors over the long term.

6. How do you plan to share the results of your work with others?

To ensure wide dissemination of the project's results, the first priority is to share information with the local communities directly involved. This will notably include presenting the findings related to the pressure exerted by small-scale fisheries, as well as the evolution of the restored seagrass meadow areas and the associated biodiversity. These results will be shared during community meetings in the concerned villages, in a format that is accessible and understandable, in order to strengthen local ownership of the actions undertaken and to encourage sustainable management of marine resources by the communities themselves.

In addition, the project results will be showcased in scientific and technical knowledge-sharing platforms, both nationally and internationally. They will be presented at conferences, forums, symposiums, and specialized workshops, bringing together our collaborators, experts, researchers, managers, and policymakers. These events will not only serve to disseminate the lessons learned from the project, but also to contribute to global discussions on seagrass conservation and the participatory management of coastal ecosystems.

7. Looking ahead, what do you feel are the important next steps?

One of the priority areas for the continuation of the project is supporting local communities in taking responsibility for the sustainable management of the seagrass ecosystem of the Grand Reef of Toliara. The aim is to strengthen their role as key actors in conservation by supporting them in organizing, monitoring, and locally governing marine resources. This support will include ongoing training, strengthening

village management committees, and developing or updating local conventions specifically related to seagrass meadows. By valuing traditional knowledge and reinforcing the technical skills acquired during previous phases of the project, this approach aims to establish collective, responsible, and autonomous management of these critical ecosystems.

Another major challenge is reducing the pressure exerted by artisanal fishing and gleaning activities in seagrass areas. While these practices are vital for local communities, they can threaten the natural regeneration of marine habitats when carried out intensively or without proper regulation. It will therefore be essential to raise awareness among fishers about the ecological importance of seagrass meadows, to identify buffer zones or biological rest periods, and to establish, in consultation with the communities, sustainable use rules. Ongoing dialogue with resource users will help reconcile the socio-economic needs of the population with conservation imperatives.

Finally, the installation of artificial habitats for fish, molluscs, and crustaceans near seagrass areas represents a strategic complementary action. These artificial habitats will promote the reproduction and repopulation of fishery species while reducing direct pressure on the seagrass meadows. By enhancing the productivity of surrounding areas, these structures will contribute to diversifying and securing catch sources for local fisheries, while strengthening the resilience of ecosystems. This integrated approach will help bridge conservation and livelihood improvement by offering concrete and sustainable solutions for coastal communities.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

No, we did not use The Rufford Foundation logo in any materials produced in relation to this project. Additionally, the Foundation did not receive any publicity during the course of our work.

9. Provide a full list of all the members of your team and their role in the project.

- Pr. RANIVOARIVÉLO Lantoasinoro : My technical supervisor on this project and my PhD research supervisor. She is Teacher-researcher at IH.SM, University of Toliara, Madagascar. Currently head of teaching, she has been working for many years on marine biology and ecology research at the IH.SM, supervising Masters and PhD dissertations.
- Ph.D Mat VANDERKLIFT : My supervisor in transplantation techniques. He is a marine ecologist whose research primarily focuses on coastal ecosystems. He is director of the IORA Indian Ocean Blue Carbon Hub, and leads research projects in the Indian Ocean and Australia that seek to provide the science to support development of policies for "blue carbon".
- Ph.D Cicelin RAKOTOMAHAZO : My supervisor in environmental education and awareness. He is a coordinator of Blue Forest in Blue Ventures of Madagascar. He works with me about Project Management - Project Planning - Social Sciences - Environmental Management Systems - Fisheries Management - Sustainable Forest Management
- Mr MASOAVA Joël Arnaud, a specialist in marine biology and ecotourism. He is my assistant for diving, socio-organisation during environmental education,

awareness-raising, training of local communities and surveys of fishermen. From February 2020 to November 2023, he is the promoter of the NGO Toliara Eco Restoration.

10. Any other comments?

Initiatives for dialogue are underway with local communities in each intervention village to secure the restoration sites. These actions include the installation of stakes and buoys to permanently demarcate and protect the restored areas. Ongoing discussions have also been held with local communities to guide the management and preservation of the sites. At the same time, discussions are in progress to establish new committees or local associations specifically dedicated to seagrass restoration activities in each village. Indeed, regular community meetings help assess needs, incorporate residents' suggestions, and guide actions toward the adoption of local agreements tailored to community expectations.

ANNEX – Financial Report
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